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- 5/16/97  
- DOESN'T INCLUDE  
MINING DETAILS  
"PRELIMINARY"

MINING PLAN FOR  
ZIEGLER CHEMICAL & MINERAL CORPORATION'S PROPOSED  
TOM TAYLOR MINE AT SHAFT NUMBER 3 ON THE  
LITTLE EMMA GILSONITE VEIN  
SECTION 3, T11S-R24E, LSNM, UTAH COUNTY, UTAH

BY  
ROBERT E. COVINGTON  
CERTIFIED PROFESSIONAL GEOLOGIST NO. 1705

REPORT FOR:  
GORDON S. ZIEGLER, JR., PRESIDENT  
ZIEGLER CHEMICAL & MINERAL CORPORATION  
FEBRUARY 26, 1997

DOGN RECEIVED  
5/16/97  
- DOESN'T INCLUDE  
MINING DETAILS  
"PRELIMINARY"

Subpart 3592 - Plans and Maps

OWNERSHIP

NAME OF LESSEE:

Ziegler Chemical & Ineral Corp.

Attn.: Gordon S. Ziegler, Jr. President

100 Jericho Quadrangle

Jericho, New York 11753

Phone: 516-681-9600 Fax: 516-681-9604

Mine Office:

Norman R. Haslem, Superintendent

Star Route, Little Bonanza, Utah 84078

Phone: (801) 789-3593 Fax (801) 789-3593

Consultant for Ziegler Chemical & Mineral Corp.:

Robert E. Covington, CPG #1705

P O Box 1845

Vernal, Utah 84078

Phone: (801) 789-3233 Fax (801) 789-4560

FEDERAL LEASE SERIAL NUMBER:

UTU - 0122694

DESCRIPTION OF GILSONITE LEASE:

TOWNSHIP 10 SOUTH - RANGE 24 EAST, UINTAH CO., UTAH:

Section 3: N<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub> (Lots 1,2

Containing 80 acres, m/l.

NAME AND ADDRESSES OF SURFACE AND MINERAL OWNERS, IF OTHER THAN U.S.

NONE

**PROPOSED PLAN FOR THE RE-ENTRY AND MINING  
GILSONITE IN THE LITTLE EMMA SHAFT NO.3  
C-N $\frac{1}{2}$ NE $\frac{1}{4}$  SECTION 3, T10S-R24E  
UINTAH COUNTY, UTAH**

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Ziegler Chemical & Mineral Corporation proposes to re-enter their old No.3 mine shaft on the southeast end of the Little Emma gilsonite vein to mine out a remaining block of ore located within the mining boundaries of Shaft No.3. The last mining which was undertaken was done in the summer of 1968. Mining will take place on U.S.Gilsonite Lease U-0122694. No new disturbance is anticipated.

THE PROPOSED ACTION- 3592.1

The Little Emma gilsonite vein is located in the northeastern part of the Uinta Basin. The vein has a North 56° West trend and averages 24 inches on the surface. The No.3 shaft was sunk to a depth of 230'. Four thousand tons of ore has been mined. An estimated 55,000 tons of gilsonite underlies this block and is available for mining. Gilsonite is a solid hydrocarbon and has been classified by Abaham as an asphaltite. Nearly all of the gilsonite veins have a northwest-southeast trend, and, for the most part are, essentially parallel with each other. The gilsonite occurs in vertical fractures which vary in width from a few inches to more than 18 feet. A vein which is commercially "mineable" should be more than 20" wide so that a miner can turn sideways in the vein to mine with pick or chipping hammer. In general, the veins maintain a relatively constant width where they cut sandstones, but within a soft shale section, often thin and "pinch". Most of the commercially mineable ore is located within the Uinta formation of Eocene age. In the Gusher area, between Roosevelt and Vernal, the veins are located in the Duchesne River formation which overlies the Uinta formation. The base of the Uinta formation (top of the Green River formation) is usually the "bottom"

of the workable ore within a given vein. Sometimes the base of the "mineable" ore is well above the contact of the Uinta and Green River formations because the bottom of the vein is filled with "rubble" (rock) which has fallen from the vein walls into the gilsonite fracture which at that time was a tarry, viscous hydrocarbon that had not as yet solidified into solid form.

#### THE MINING PLAN-2.1.1

The Mining Plan envisions re-opening the old Shaft No.3 of the Tom Taylor mine on the southeast end of the Little Emma vein. This shaft is located in the approximate center of the  $N\frac{1}{2}NE\frac{1}{4}$  of Section 3, T10S-R24E, with an approximate elevation of 5610'. An access road to the mine takes off from approximately the NW corner of the  $SW\frac{1}{4}SE\frac{1}{4}$  of Section 35, T9S-R24E, the junction of the road with paved State Highway 45 which connects the town of Bonanza, Utah with the Rainbow-Dragon-Baxter Pass roads. At this junction, both the paved State 45 and the access road are located within Wagon Hound Canyon. The mine lies uphill from the junction about 6,000' in distance and ascends from an elevation of 5,000' to 5610'.

The old airshaft to the west of the Tom Taylor Shaft No.3 is located a distance of 260 feet west along the vein. The old airshaft to the southeast is located 180 feet from the centerline of Shaft No.3. These will be retimbered and new ladders constructed for escapeways.

The mine collar is 18' in length and 3'6" in width. It is presently 4' in height and now has a wall thickness of 8" and is made of concrete and is reinforced with rebar. The lift cage compartment will be 7' in width, the ladder manway will be 6' and the utility compartment will be 5' wide and will accommodate the air hose conduit, electrical cables and pipeline to the working area. Stoping will begin near the top of the vein on both side of the shaft, 10' below the bottom of the first pillar in the old mining workings. Air hammers withmoil point bits will be used for chipping the ore.



#### TEMPORARY FLOORS AND MINE WALL STABILIZATION-2.1.1.1

Wooden braces will be placed wherever necessary to brace the wall. Chain link fence will provide temporary floors, supported by wooden skulls which have been chipped into the rock walls. Now the face of the ore is 170' northwest of the centerline of No.3 shaft. The airlift conduit will be run in the shaft vertically to the first level and will then be elbowed to the west face for lifting the ore back to the surface. After this block of ore has been mined, shaft timbering will be carried to total depth of the old mine, which is 220'. As outlined above, the upper 20' from the roof to the surface will be left intact and unmined, forming a "safety roof to prevent surface subsidence and to avoid any open cuts. Vertical distance between mining blocks will be 100'. A 10' pillar of ore will be left between blocks for safety reasons. Gilsonite chipped from the slope face will fall to the bottom of the slope and will be air lifted to the surface and into the ore bins which are 14' by 20' with a 45° sloped base which is 16' in vertical direction and is equipped with a dust collector. From the ore bin the ore moves into the bag house.

#### BORE HOLES AND SAMPLES-2.1.1.2

Ziegler will submit promptly to the BLM's Authorized Officer a signed copy of records of all core and test samples taken from the lease area. Accompanying this submittal is a plat which shows the proposed layout of the hoist house, the tibble and its ore bin, the compressor building placement, the airlift pad, the waste rock disposal area, the escapeways access roads and the storage area for grease, engine oil and the diesel oil for the compressor. The location of holes and samples will be plotted on the layout map and will be retained for one year.

#### DISPOSAL OF WASTE ROCK-2.1.1.3

Waste rock produced during mining would consist of wall rock and rubble possibly containing some gilsonite in a mixture which is not economically viable to separate. This rock would be pushed back into the shaft after the completion of mining and before the shaft is sealed.

#### MAPS OF UNDERGROUND WORKINGS AND SURFACE OPERATIONS-2.1.1.4

Ziegler will retain and maintain maps of all underground workings on a scale which is acceptable to the BLM. These will include plan maps and vertical cross section maps. These maps will be certified by a professional engineer, professional land surveyor or other qualified persons and will be furnished to the BLM's Authorized Officer as required.

#### PRODUCTION RECORDS AND MAPS-2.1.1.5

Ziegler will maintain all required records and maps showing production of ore from the leased lands and will submit them to the AO at the end of each royalty reporting period. The records and maps will include and mining problems encountered during the operations, such as subsidence, faulting, unusual wall rock condition which is unusual.

#### HAZARDOUS MATERIALS-2.1.1.6

No hazardous materials will be used during the mining operation. The generator will use diesel fuel and the interior of the hoist house will be heated with propane. Motor oil will be used in the engines and grease will be used for all lubrication.

#### TRANSPORTATION OF THE ORE-2.1.1.7

The ore will be transported daily, except for Saturdays and Sundays in the Company's 6 ton ore trucks. Ziegler estimates that there will be four ore trucks per day hauling the ore from the mine to Ziegler's sacking plant 6 miles to the north on paved State Highway 45. The road from the mine to the highway consists of 1.25 miles of graded dirt road. These ore trucks will be covered during hauling operations to prevent gilsonite dust escaping into the air.

#### WORKFORCE- 2.1.1.8

The work force will consist of two underground miners and one hoist man.

#### MINE-ASSOCIATED FACILITIES

##### MINE/ACCESS HAUL ROAD - 2.1.2.1

The mine access road was discussed under "Transportation of the ore, Section 2.1.1.7 of this report. As previously stated, no new road work is proposed and no additional surface disturbance is necessary.

##### OTHER SURFACE FACILITIES 2.1.2.2

The surface facilities to be used in the mining operation consist of the following:

A hoist house and headframe for to raise and lower the diesel powered hoist in the manway portion of the mine shaft;

An ore bin for the storage and for the loading of the gilsonite;

The compressor house to supply air to equipment in the mine; this unit will be a 350 CF/M and is electrically driven;

The generator house for the propane powered generator to provide lighting and to run the compressor

Air lift equipment which will be located on a pad next to the headframe. Ore will be lifted by the equipment through a 12" pipe which runs down the utility shaft and is operated by a 100 hp diesel powered motor-fan unit.

##### TOTAL AREA OF SURFACE DISTURBANCE - 2.1.2.3

No new surface disturbance is proposed.

##### ABANDONMENT and RECLAMATION - 2.1.3

Upon the completion of mining operations, all machinery, equipment and debris will be removed from the site. The site will be graded to

conform as closely as possible the original contours of the area before mining operations commenced. The site will be covered with the pre-existing topsoil and will be seeded with a mixture which is recommended and approved by the Authorized Officer of the BLM. The presently approved mixture for this soil is 75% western wheat-grass, 5% yellow clover, 10% fourwing saltbush and 20 pounds of winter-fat.

Closure of the collar would be done by placing at least 6 4 x 4" timbers across the openings at intervals of 4'. Then 3/4" plywood will be nailed across the timbers and will overlap the edges of the concrete coffin by at least 1" on all sides. Concrete which has been reinforced with rebar will be poured on top of the plywood at least 12" thick so as to form an effective seal on all sides. Both escapeways would be sealed in a similar manner.

#### APPLICANT COMMITTED PRACTICES - 2.1.4

##### AIR QUALITY- 2.1.4.1

Ziegler regularly installs on the top of the head frame Micropul bag filters which collect the dust raised by the airlift system.

##### STORM WATER DRAINAGE CONTROL - 2.1.4.2

On the low side of the shaft a berm will be constructed to collect any runoff waters from rain or melting snow. A berm will also be built on the low side of the ore bin for the same purpose.



#### FIRE PROTECTION EQUIPMENT -2.1.4.3

Ansul 20# dry chemical nitrogen charges fire extinguishers will be placed in all required places. Two will be located in the hoist house and one at the collar of the mine shaft, one will be located at the generator house. All fire rules will be strictly complied with.

#### SAFETY PRECAUTIONS FOR OPEN PLACES AND OTHER HAZARDS-2.1.4.4

Chain link wire fencing will be placed around any openings. The four corner of the fence will consist of the structural equivalent of 2" tubing, cemented in a 4 foot hole for stability. Appropriate warning signs will be placed on each site. Ziegler anticipates only two openings in this plan, one for the east escapeway and one for the west escapeway. When mining is not underway, the shaft will be covered with planking which is suitable for prevention of accidents. The compressor house and the generator house will have warning signs placed indicating that ear plugs should be worn in and around them to prevent hearing loss.

#### CULTURAL RESOURCES- 2.1.4.5

The mining plan is a continuation of working and mining the ore in a previously operated mine in which mining began about 1964 and ceased in 1967. No collecting of artifacts by Ziegler employees will be allowed.

#### MISCELLANEOUS RULES AND REGULATIONS-2.1.4.6

Because of the small size of the proposed mining operation (3 man work force and because the mining will all take place underground, no significant pollution of air, soil or ground water is anticipated and no samage to wildlife or wildlife habitat is expected. There are no hazards to public health in the proposed plan. There will be no open fires of any kind except in approved buildings and then only in approved stoves or furnaces. No trash will be left in unauthorized places and two 55 gallon open drums will be placed as receptacles for trash. No unnecessary off road driving will be allowed. No collecting of plants will be permitted. Camp will be kept clean. Any unusual activity such

as observing poachers, etc would be reported to the AO of the BLM.

#### COMMUNICATIONS 2.1.4.7

Cellular telephone service will be maintained between the mine and Ziegler's mine office for safety and for efficiency of operations.

#### SOLID WASTE DISPOSAL - 2.1.4.8

All solid waste and ~~garbage~~ (except for the ~~waste~~ rock previously mentioned, which will be pushed into the shaft after completion of mining operations) will be placed in 55 gallon drums and hauled to Ziegler's existing dump at Little Bonanza. A portable chemical toilet will be placed at the mine site by Ziegler personnel.

#### ALTERNATIVE ACTIONS - NO ACTION - 2.2

There are no other reasonable alternatives for the mining of gilsonite. The proposed action describes the only practicable way to mine the ore in an efficient and economical manner. Under the no-action alternative, the proposed action would not be implemented. Current land use practices would continue and gilsonite leasing would continue under the BCRMP (BLM 1984). Any new proposals for the mining of gilsonite from the EA area would be reviewed under the NEPA process prior to approval.

## Wildlife

The proposed mine is located within the boundaries of Antelope Herd Unit 95—the Bonanza Herd. However, habitat in the vicinity of the mine is not suitable for antelope due to steep and rugged terrain. For the same reasons, the mine area is not suitable habitat for sage grouse, the most common game bird in the general vicinity. The area around the mine would be frequented by various species of small mammals including rabbits, hares, and rodent species, as well as various bird species. Because the mine would result in little disturbance to natural habitats, no impacts are anticipated to wildlife species.

Regarding federally listed threatened, endangered, and candidate species, the endangered black-footed ferret has the potential to occur wherever prairie dog colonies of sufficient size and acceptable location are found. A single white-tailed prairie dog colony of 250 acres or a complex of smaller colonies (occurring within the area of a circle with a 4.5-mile radius) that totals 250 acres is considered to be the minimum size necessary to constitute potential black-footed ferret habitat. Prairie dog colonies of sufficient size and density to meet USFWS criteria to require a ferret survey do not occur at the mine site; in fact, no prairie dog colonies exist at the mine site due to the steep topography. There have been numerous unconfirmed reports of ferret sightings within 15 miles of the mine site, both in Utah and Colorado; however, none of the sightings occurred at the mine site. The proposed mine would not affect black-footed ferrets because suitable habitat does not occur in the project area.

The project area is south of the 51,000-acre Coyote Basin Primary Management Zone (PMZ) which is proposed for black-footed ferret reintroduction, although it is within the larger buffer area that would be designated as the "experimental population area." This is one of several such potential or proposed reintroduction areas that would be an integral part of the recovery plan for this federally listed endangered species. The proposed mine would not affect reintroduction of black-footed ferrets in Coyote Basin because there are no prairie dog colonies suitable for black-footed ferret habitat within the mine area or along the existing roads which would be used for transporting ore to Little Bonanza.

No officially designated critical habitat for the endangered bald eagle exists on the mine site. Bald eagles are known to hunt the uplands surrounding the White and Green Rivers, including the mine site, for jackrabbits, cottontails, and carrion during the winter. The species has been known to roost in large numbers along the cottonwood bottoms of the White River, one of which is located 1 mile southeast of the proposed mining operation. One adult bald eagle was observed near the mine site during a field reconnaissance on March 5, 1997. However, bald eagles would not be affected because their use of the project area is limited and seasonal.

No endangered peregrine falcons are known to nest in the project area, but peregrines have been observed and are believed to nest in the White River Canyon. Excellent peregrine nesting habitat (south-facing slopes in excess of 300 ft high within 1 mile of a river) exists within 1-2 miles of the mine site. Such habitat is nonexistent at the mine site. Peregrines may occasionally hunt the uplands surrounding the White River, including the area in the



vicinity of the mine. However, peregrines would not be affected because their use of the mine area is limited, and occurs predominantly along the White River.

Whooping crane, an endangered species, fly over the EA area on their migration flights, but do not use the mine area as there is no suitable habitat.

Two endangered fish species occur in the White River--the Colorado squawfish (*Ptychocheilus lucius*) and the razorback sucker (*Xyrauchen texanus*). Critical habitat has been designated for the Colorado squawfish in the White River adjacent to the mine site. Neither of the endangered fish species would be affected because there would be no water depletions nor would any sediments likely reach the White River due to the topographic relationship of the mine to the river.

Candidate animal species (formerly federally listed as Category 1 candidate species) that occur in the general vicinity of the project area include mountain plover (*Charadrius montanus*). Mountain plovers generally nest in short-grass prairie habitat on the high, dry plains and are often associated with prairie dog colonies. They have been documented in suitable habitat several miles to the north of the mine area; however, there is no suitable habitat at the mine site for the mountain plover.

Four special status wildlife species may occur in the vicinity of the mine site. The golden eagle is protected by the Bald Eagle Protection Act. The ferruginous hawk (*Buteo regalis*), flannelmouth sucker (*Catostomus latipinnus*), and roundtail chub (*Gila robusta*) were former Category 2 species until February 28, 1996, when the U.S. Fish and Wildlife Service dropped their former Category 2 and Category 3 lists. The ferruginous hawk and roundtail chub are still considered to be State Sensitive Species (Utah Divisions of Wildlife Resources 1987).

Ferruginous hawks inhabit the areas surrounding the mine site, and numerous active and inactive nests have been located in surveys conducted primarily in conjunction with construction of a railroad and power line associated with the Desert Generation and Transmission Power Plant north of the mine site. Adequate nesting habitat for the ferruginous hawk exists within 0.5 mile of the mine in the form of scattered Utah junipers and rock pinnacles and ledges. The lack of a reliable prey base and steepness of the canyon walls may preclude the area as nesting habitat. Ferruginous hawks would not be affected because no active or inactive nests have been located to date within 0.5 mile of the mine site.

Golden eagles are protected under the Bald Eagle Protection Act. Golden eagles are present in the general vicinity of the mine site year-round, and at least two golden eagle nests are located on a steep cliff face 2,954 ft north of the mine. The two nests are considered part of one golden eagle territory, which may consist of other alternate nest sites in the area as well. However, no other alternate nests were located in a very minimal survey conducted in March, 1997. The easternmost of the two nests located appears to have a significant amount of white-wash (excrement), indicating very recent activity. An adult eagle was observed flying near the cliff face on March 6, 1997, and was also seen perched

on a ledge about 30 ft below the major nest. Golden eagles normally begin their nest site selection, courtship and breeding activities in February; therefore, seeing an eagle within a nesting territory, and perching near a nest, is likely an indication that the nest has been selected for use during 1997.

Both nesting sites observed are within line-of-sight of all activities that would occur at the mine. Although the mine itself is beyond a 0.5-mile radius of the nest sites by 314 ft, the access road to the site is within the 0.5-mile radius and also within line-of-sight of the nests for the last 0.5 mile before it reaches the mine. At its closest point, the access road passes within 880 ft of the nests. However, the access road would not be used at times when there would be a likelihood of disturbing the golden eagle nest.

Flannemouth sucker and roundtail chub are both found in the White River east and south of the mine site. Neither would be affected because there would be no water depletions, and the small amount of surface disturbance would not result in a significant increase in the amount of sediment reaching the White River.

### **Climate and Air Quality**

Based on data collected from 1948 to 1992 at Bonanza, Utah, a few miles north of the proposed project area, mean annual temperature is 47.8°F, mean annual maximum temperature is 62.2°F, and mean annual minimum temperature is 33.4°F. July, August, and June are the three warmest months, respectively, and January, December, and February the coldest. Mean annual precipitation is 9.17 inches, with May and October the wettest months and February and December the driest. Snowfall averages 18.2 inches per year.

Air quality in the project area is good and meets National Ambient Air Quality Standards. In order to reduce dust resulting from the mining operations, the ore bin would be equipped with a dust collector, Micropul bag filters would be installed at the top of the head frame to collect dust raised by the airlift system, and trucks hauling ore from the mine would be covered. Other project-related emissions would be from a diesel engine that would operate the hoist, a propane-powered generator to run the compressor and lights, and a diesel-powered fan designed to lift ore to the surface.

### **Past and Present Land Use**

The project area has been used for grazing, wildlife habitat, and mining. Oil and gas development occurs on less rugged terrain a few miles to the north of the mine site. Much of the project area is too steep and rugged for optimal livestock grazing. As discussed elsewhere in this document, the mine operated in the past for gilsonite extraction, with previous mining in Shaft No. 3 of the Tom Taylor Mine completed in 1968. The proposed project would reinstate mining as a land use for the life of the mine, and would have little impact on other existing land uses. Once mining was terminated, land use for grazing and wildlife habitat would continue unimpeded.

The access road has also been used by recreationists for access to the White River. This access would continue unimpeded during and after mining operations. Mining traffic would be minimal during the week, and the mine would not operate on weekends when most recreational use would occur.

### **Surface Waters**

There are no perennial streams on the project area. The White River, approximately 1 mile away, is the nearest perennial stream. The project area is drained by an ephemeral wash into the White River via Wagon Hound Canyon. Because of the lack of additional surface disturbance and the distance from the White River, no sedimentation is likely to reach the White River as a result of the project.

### **Cultural Resources**

No cultural resources surveys would be required because no new surface disturbance will be associated with the mine. If any cultural resources would be discovered during any phase of mine operations, however, all work that could disturb such cultural resources would immediately cease, and the BLM Authorized Officer would be notified. Work would not continue until the AO made a determination as to the disposition of the cultural resources and notified Ziegler that work could resume.

### **Vegetative Cover**

Vegetation in the vicinity of the mine site is dominated by sagebrush, rabbitbrush, and juniper. Impacts to vegetation would be negligible because no additional disturbance would take place, and because dust would be minimized using filters and dust collectors.

Regarding reclamation, I can only suggest what appears in the EA. I don't know about the topsoil stockpiles--where they are located, etc. I thought you covered reclamation pretty well in the EA. That section said:

Upon completion of mine operations, all machinery, equipment, and debris would be removed from the site. The site would be graded to conform as closely as possible to premining conditions, covered with previously stockpiled topsoil, and seeded with a mixture approved by the AO. Currently, a seed mixture consisting of 75% western wheatgrass, 15% fourwing saltbush, and 10% winterfat harrowed in at 20 pounds per acre would be used for revegetation.

When the mine shaft would be ready for closure, at least six 4 x 4 inch timbers 4 ft long would be placed across the opening at intervals of about 4 ft. Plywood (3/4 inch) would be nailed in place on the timbers so as to overlap the shaft opening by at least 1 inch on all



sides. Twelve inches of reinforced concrete would be poured on the plywood so as to overlap on all sides and establish an effective seal. Escapeways would be sealed in a similar manner.